

## Colon hydrotherapy plus Traditional Chinese Medicine to treat non-alcoholic fatty liver disease: a pilot study

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### Abstract

**OBJECTIVE:** To demonstrate the potential to treat non-alcoholic fatty liver disease (NAFLD) with colon hydrotherapy (CHT) plus Traditional Chinese Medicine (TCM).

**METHODS:** A total of 20 patients were enrolled into the study and received CHT with TCM for 2 weeks. Body mass index (BMI) and levels of serum triglycerides (TG) and total cholesterol (TC) were compared between pre-treatment and post-treatment.

**RESULTS:** Two-week treatment with CHT plus TCM significantly lowered BMI and reduced blood lipids. BMI decreased from  $29.5 \pm 4.3$  to  $25.4 \pm 1.0$ , while mean TG levels decreased by 0.70 mmol/L on average from baseline and mean TC levels decreased by 0.37 mmol/L. Forty-five percent of patients exhibited TC decreasing by more than 10% from baseline and 25% of patients exhibited TC decreasing by more than 20%. Sixty percent of patients exhibited TG decreasing by more than 20% and 20% of patients exhibited TG decreasing by more than 40%. However, high-density and low-density lipoprotein cholesterol

levels did not change significantly after intervention. No serious adverse events were reported.

**CONCLUSION:** Our findings suggest that CHT plus TCM to treat NAFLD is promising and it might be a new treatment strategy for management of NAFLD.

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**Keywords:** Non-alcoholic fatty liver disease; Hydrotherapy; Triglycerides; Cholesterol; Medicine, Chinese traditional; Pilot projects

### INTRODUCTION

The prevalence of non-alcoholic fatty liver disease (NAFLD) has increased globally in recent years, becoming one of the leading causes of chronic liver disease in both developed and developing countries.<sup>1-4</sup> In the Western world, NAFLD affects 25%-30% of the general population<sup>5</sup> because of fat-rich foods and poor lifestyle. Currently, there are two major therapies for NAFLD: pharmaceutical and lifestyle interventions. Though weight reduction and dietary modifications are the most recognized strategies for the management of NAFLD, pharmaceutical therapies exhibit few positive outcomes in clinical trials. In addition to pharmacologic management, complementary and alternative medicine provides other approaches, such as Chinese herbal medicines and acupuncture.

Over the past decades, application of herbal treatment for NAFLD has received increasing attention given its wide availability, fewer side effects, and therapeutic benefits.<sup>6-8</sup> At the same time, Hu *et al.*<sup>9</sup> claimed that the gut was believed the key target of Traditional Chinese Medicine (TCM) treatment for alcoholic and non-alcoholic fatty liver diseases. The effect of colon hydrotherapy (CHT) plus TCM was evaluated in the present study.

## MATERIALS AND METHODS

### Study design

The present study was an observational pilot study. Participants were patients with NAFLD selected from the Guangdong Provincial Hospital of Chinese Medicine. Eligible patients were enrolled and received CHT with TCM. The study was carried out in accordance with the ethics committee of the Guangdong Provincial Hospital of Chinese Medicine. Written consent to participate in the trial was obtained before enrollment. The hospital institutional review board approved the study.

### Inclusion criteria

The diagnostic criteria were based on the guidelines for the diagnosis and treatment of NAFLD.<sup>10</sup> Other inclusion criteria were as follows: (a) age 18 to 65 years; (b) not taking any other medicine for treatment in recent months; and (c) being suitable for bowel preparation.

### Exclusion criteria

Patients with any of the following conditions were excluded: (a) positive testing for hepatotropic viruses, hepatitis A, B, C, D, and E, and drug-induced liver disease or autoimmune liver disease; (b) co-occurrence of severe primary disease of the heart, brain, kidney, endocrine system, blood, metabolism, or gastrointestinal tract, suffering from mental health disorder, or the presence of other major diseases including type 1 diabetes; (c) currently taking medicine to lose weight or maintain fitness; (d) patients with allergies, multidrug sensitivity, or hypersensitivity of test drug or its compositions; (e) previous history of colon surgery; or (f) pregnancy or lactation.

### Treatment protocol and period

CHT with Chinese herbal decoction was performed in enrolled patients every other day by the same trained physician for all patients. CHT was performed using a JS-308-e colonic dialysis machine (Jinjian Medical Equipment Co., Ltd., Guangzhou, China) (Figure 1). All traditional herb medicines used in the study were purchased from Kang Mei Pharmaceutical Company (Guangzhou, China). In the first step, purified warm water (38 °C) was circulated throughout the colon for a duration of about 40 min, removing colon contents while the patient lay on a bed. During this process, water pressure was 20 kPa and the perfusion flow was maintained at 600 mL/min in a pulse-like manner. Water was infused at a rate of 800 - 2000 mL per session based on the tolerance of patients. Each patient was infused 5-8 times, or until the liquid washed out was transparent. During the second step, a Chinese herbal decoction was irrigated to the colon, similar to a retention enema. The decoction was prepared with Shanzha (*Fructus Crataegus Pinnatifidae*) 30 g, Danshen (*Radix Salviae Miltiorrhizae*) 30 g, Juemingzi (*Semen Cassiae*

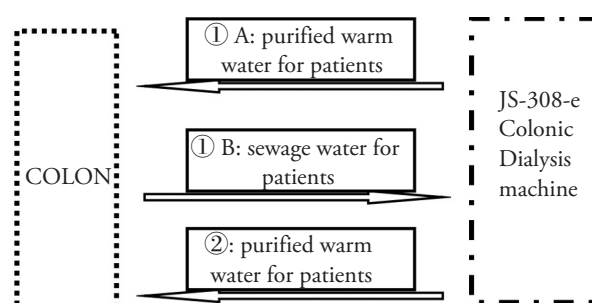


Figure 1 Function of colon hydrotherapy instruments  
Purified warm water was poured into the patient's colon. The sewage water is pushed out by the pressure of the water-filled colon. Chinese herbal decoction was irrigated to the colon

*Obrusifoliae*) 30 g, Muli (*Concha Ostreae*) 30 g, Fuling (*Poria*) 30 g, and Yujin (*Radix Curcumae*) 30 g and boiled down to 150 mL. A volume (150 mL) of the decoction was used each time as a high enema (20-30 cm) and reserved there for over 60 min. The whole therapeutic course was 2 weeks. Other treatment, including basic liver protecting therapy, was continued among patients with abnormal ALT levels.

### Measurement

Primary outcomes were body mass index (BMI), triglycerides (TG), and total cholesterol (TC). All data were collected and managed by one of the team members who was not involved in the treatment. Laboratory indices were assessed using an automatic biochemical analyzer (Roche Cobas 6000, Roche Corporation, Basel, Switzerland).

### Data analysis

Data are presented as mean ± standard deviation. Comparisons were conducted between pre-treatment and post-treatment values. For normally distributed variables, means were compared using paired *t*-tests (two-tailed), and nonparametric variables were analyzed using Pearson's  $\chi^2$  tests. Data were analyzed using SPSS 16.0 (SPSS Inc., Chicago, IL, USA).  $P < 0.05$  was the two-tailed significance level.

## RESULTS

### Baseline characteristics of the patients

Twenty patients were enrolled and observation was completed in all cases, with no cases dropping out. The median age of the patients was 32.5 years and most were male (85%). The median duration of NAFLD was 2.5 years. Among all patients, 16 patients showed abnormal ALT levels, with 12 patients having abnormal TC levels and 17 patients abnormal TG levels. More detailed information of the enrolled patients is listed in Table 1.

### Changes in BMI, blood lipids and liver function after intervention

The significant reduction in BMI demonstrated after

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